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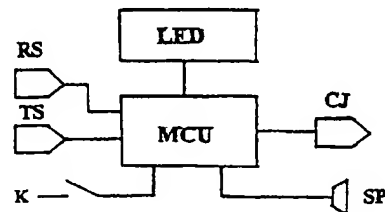
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[54]发明名称 一种电饭锅的可编程控制方法

[57]摘要

一种电饭锅的可编程控制方法，其特征在于：将功能控制程序以条形码的形式表示，用接收条形码的条形笔接收反映控制程序的条码信息，将该条码信息输入电饭锅控制器的微控制器，通过解码得到相应的温度控制程序，实现对电饭锅的程序控制。本发明可为用户提供不同需要的控制程序，即菜谱手册或光盘，具有全功能的效果，而且使用起来直观、方便和实用。

权 利 要 求 书

1. 一种电饭锅的可编程控制方法,其特征在于:将功能控制程序以条形码的形式表达,用接收条码信息的条码笔接收反映控制程序的条码信息,将该条码信息输入电饭锅控制器的微控制器,通过解码得到相应的温度控制程序,实现对电饭锅的程序控制。

2. 如权利要求1所述的一种电饭锅的可编程控制方法,其特征在于:电饭锅条码表示形式包括温度值、时间值,可以包含一组温度和时间值,也可以包含多组温度值和时间值。

3. 如权利要求2所述的电饭锅条码,其特征在于:条码可与烹调的文字说明一同构成菜谱手册或光盘。

4. 如权利要求2、3所述的电饭锅条码,其特征在于:条码编码格式中的温度值分为大开锅、中开锅、小开锅、保温或45℃至125℃范围内的任意值;时间值设定可以是半分钟至一周内的任意值。

5. 如权利要求1所述的一种电饭锅的可编程控制方法,其特征在于:电饭锅的控制显示可在锅体图案下,设一行发光器件,发光图案的长短表达加热功率大小,在锅体上,可设置增加键和减小键,直接调节加热功率的大小。

一种电饭锅的可编程控制方法

本发明涉及一种家庭电器的控制方法。特别是涉及到对电饭锅的编程及控制的方法。

目前市场上的电饭锅大体可分为两类，磁控类和电子控制类。磁控类电饭锅也称机械锅，是利用永久磁铁在"居里"温度点失磁的原理来控制温度的；电子控制电饭锅也称电脑控制电饭锅，目前大都采用单片机控制。这类电饭锅通常在单片机中设计有若干个功能程序，能实现四到十几个功能。以上传统的电饭锅存在着一旦设计定型，电饭锅的控制功能将不能再改变的缺点。由于功能的固定，不能随时扩展，所以其适应性差，不能针对不同的食品或同一原料不同品种的烹调要求改变加热程序。

本发明的目的在于提供一种采用读取控制程序，对电饭锅进行可编程的控制方法，进而使电饭锅具有开放式的控制功能。

本发明实现上述目的的关键在于：将功能控制程序以条形码的形式表达，用接收条码信息的条码笔接收反映控制程序的条码信息，将该条码信息输入电饭锅控制器的微控制器，通过解码得到相应的温度控制程序，实现对电饭锅的程序控制。

电饭锅的条码表达形式，包括温度值、时间值，可以包含一组温度和时间值，也可以包含多组温度值和时间值。

所述条码可与烹调的文字说明一同构成菜谱手册或光盘。

所述控制程序条码编码格式中的温度值分为大开锅、中开锅、小开锅、保温或46 ℃至125℃范围内的任意值；时间值设定可以是半分钟到一周内的任意值。

所述电饭锅的控制显示可在锅体图案下，设一行发光器件，发光图案的长短表达加热功率大小；在锅体上可设增加键和减小键，直接调节加热功率的大小。

本发明所述的方法可以通过编制各种条形码，即控制程序；用户可根据菜谱手册或光盘，也可自己编制条形码，根据不同需要，选择不同的控制程序。因此具有全功能的效果，而且使用起来直观、方便和实用。

图面说明：

图1是本发明的电饭锅控制器原理框图。

图2是本发明条码笔的原理框图。

图3是本发明条码菜谱的一个实施例。

图4是本发明的电饭锅控制器的实施例图。

图5是本发明的条码笔的实施例图。

本发明的电饭锅控制器原理及方法见图1、图3,图1中LED 是发光显示器,MCU是微控制器、RS是红外接收器、CJ是继电器、SP是蜂鸣器、K 是控制键、TS是温度传感器;图3中控制器主要由以下几部分构成:T2变压器;D2-D4整流桥;V2稳压器构成电源部分。L1-L10发光二极管构成火力大小的显示部分。Q3;D7构成主热片控制。Q2;T3;O8构成辅助加热控制。Q4;B2为蜂鸣器电路。CN8外接两史热敏电阻传感器。O1为红外接收头电路。S1-S3定时功能设定开关。V1 TMS370是全电路的CPU。控制器电源部分为电路提供5V和12V电压。CPU在启动后接收来自红外接收器的信号。CPU 按信号解码内容启动控制程序。在控制过程中,CPU由温度传感器测试锅底与锅顶的温度值,根据温度值的状态调节主辅加热器时间,同时将加热状态送出显示。各控制状态的完成由蜂鸣器提示。此外,手动控制由控制按键直接操作实现。

本发明条码笔的原理及方法见图2、图5,图2中LCD是液晶显示器、MCU是微控制器、LS是光电传感器、LT是红外发射管、SP是蜂鸣器、K 是控制键。图5中条码笔主要由LCD液晶显示器;N1、N2、D3条码接收器;U1条码信号放大器;N2、SS蜂鸣器;S1-S4功能控制开关;CPU MSP430。条码接收器信号经U1放大器转换后送CPU。CPU检查条码格式正确且合理后, 向蜂鸣器发出信号,同时也通过发送电路向外发出编码信息,LCD 除显示发送状态外还可显示定时时间。定时时间由S2-S3开关设定。条码笔电路由电池供电。

使用时,可编程控制电饭锅的操作方法如下:首先用户在含有控制程序信息的条码菜谱上选中一道菜,按菜谱指导的方法对原料进行加工处理或配菜,并按要求放置在锅内,将锅的电源接通, 用条码笔将这道菜的控制程序条码信息划入笔中,再将笔头对准锅体上的接收部位,控制程序条码信息便会自动发送出去,此时电饭锅的控制器会接收到控制程序信息,在等待一小段时间后, 如果没有新的指令,控制器将按照相应控制程序开始工作, 直到完成全部控制程序即结束。
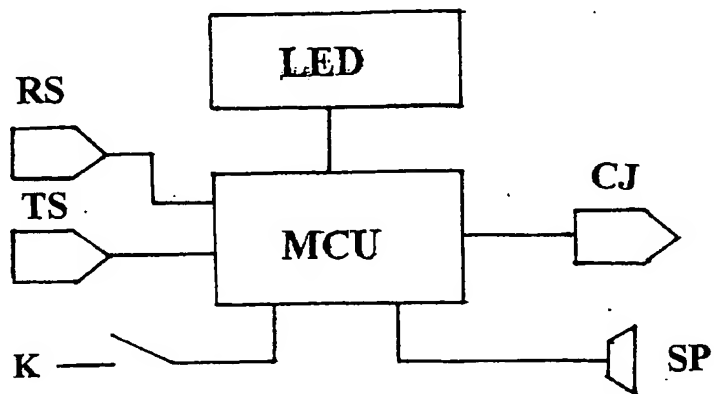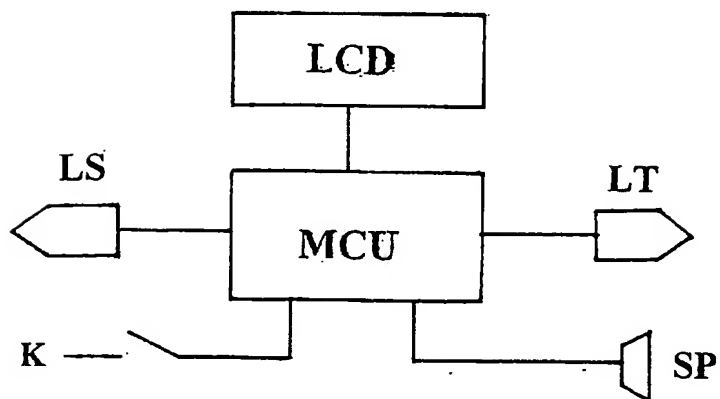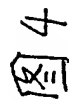
图 1

图 2

香草烧鸡

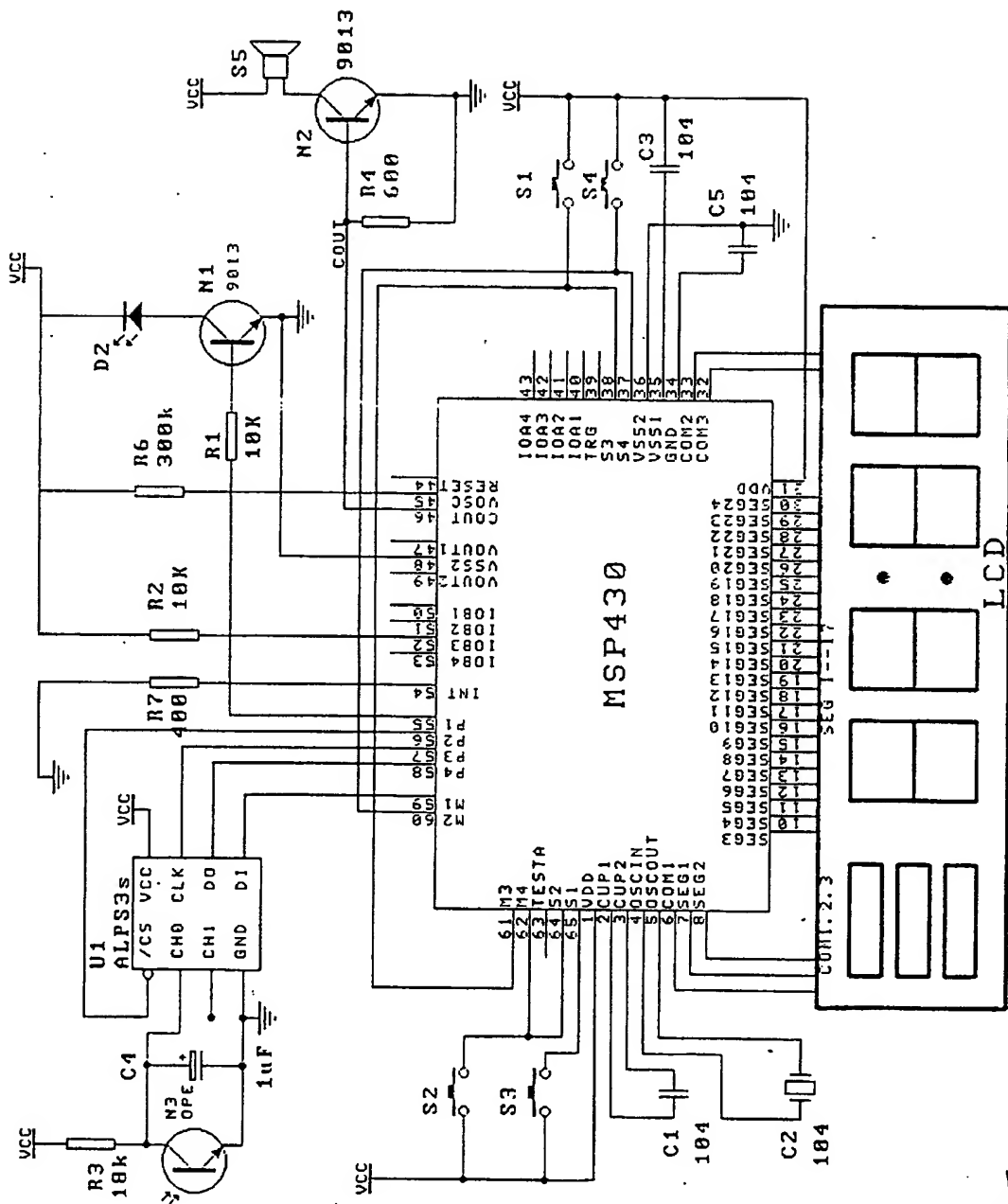| 材料: | 鸡一只，洋葱数片， |
	白兰地酒，黑胡椒．
调味:	盐2勺，胡椒粉半勺．
做法:	将材料放入鸡肚内，
	鸡身外表擦盐及胡椒
	粉，放入锅内，焗15
	分钟即可．

图3

图4

图5

Reference 1

Programmable Control Method for Electric Cooker

5   The present invention relates to a control method for household appliances and, in particular, to a method for programming and controlling an electric cooker.

At present, electric cookers in the market generally fall into two categories, namely a magnetic-controlled

10   category and an electronic-controlled category. Electric cookers in the magnetic-controlled category are also called mechanical cookers, which control the temperature using the principle that a permanent magnet is demagnetized at Curie temperature. Electronic-controlled electric

15   cookers are also called computer-controlled electric cookers, which are controlled using a single-chip computer in which a number of functional programs are designed to fulfill four to ten-odd functions. However, the traditional electric cookers outlined above have the

20   deficiency that once the design is finalized, the control function of electric cookers cannot be changed any more. Due to fixed functions, the traditional electric cookers cannot be extended at any time, are badly adaptable, and cannot change the heating program for different food or

25   various kinds of cooking requirements of the same material.

It is an object of the present invention to provide a programmable control method for an electric cooker by

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reading a control program so as to make the electric cooker have an open control function.

The key to achieving the above object is to express a function control program in the form of bar code, receive bar code information that reflects the control program, using a bar code stylus that receives the bar code information, input the bar code information into a microcontroller of a controller of the electric cooker, obtain a corresponding temperature control program by decoding, and achieve program control of the electric cooker.

Expression forms for the bar code of the electric cooker comprises temperature values and time values, which may contain a set of temperature and time values or multiple sets of temperature values and time values.

Said bar code and text description of cooking may form a menu manual or optical disk.

Said temperature values can be "large boiling," "medium boiling," "small boiling," "keep warm" or any value in the range between 45°C and 125°C. The time values can be set to any value from half a minute to a week.

The control display of said electric cooker can be arranging a row of light-emitting devices under the cooker body pattern, with a length of the light-emitting pattern indicating an amount of the heating power; or arranging an up key and a down key to adjust an amount of the heating

power directly.

The method of the present invention is implemented by compiling various kinds of bar code, i.e. control programs. Users can select different control programs according to the menu manual or optical disk or by compiling bar code according to different needs. Therefore, the method of the present invention is full functional, intuitive, convenient, and practical.

Description of the accompanying drawings:

Fig. 1 is a principle block diagram of an electric cooker controller of the present invention;

Fig. 2 is a principle block diagram of a bar code stylus of the present invention;

Fig. 3 is an embodiment of a bar code menu of the present invention;

Fig. 4 is a view of an embodiment of the electric cooker controller of the present invention; and

Fig. 5 is a view of an embodiment of the bar code stylus of the present invention.

Please refer to Fig. 1 and Fig. 3 for the principle and method of the electric cooker controller of the present invention, respectively. In Fig. 1, LED is a light-emitting display, MCU is a microcontroller, RS is an infrared receiver, CJ is a relay, SP is a buzzer, K is a control key, and TS is a temperature sensor. In Fig. 3 (which should be Fig. 4), the controller is mainly composed of the following parts: a power supply part consisting of a T2

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transformer, D2-D4 rectifiers, and a V2 voltage stabilizer; a display part consisting of L1-L10 light-emitting diodes; a main heating control consisting of Q3 and D7; an auxiliary heating control consisting of Q2, T3 and O3; buzzer circuitry Q4 and B2; an thermosensitive resistance sensor is connected externally to CN3; an infrared receptor circuit O1; and timing function setting switches S1-S3. V1 TMS370 is a full-circuit CPU. The power supply part of the controller supplies circuitry with voltages 5V and 12V. After switched on, the CPU receives a signal from the infrared receiver. The CPU starts the control program according to signal-decoded content. During the control procedure, the CPU tests temperature values at the bottom and top of the cooker by the temperature sensor, adjusts times for the main and auxiliary heaters according to a state of the temperature value, and outputs the heating state for display. The completion of each control state is prompted by the buzzer. Additionally, the manual controlled is implemented by directly operating the control key.

Please refer to Fig. 2 and Fig. 5 for the principle and method of the bar code stylus of the present invention, respectively. In Fig. 2, LED is a liquid crystal display, MCU is a microcontroller, LS is a photoelectric sensor, LT is an infrared transmitting tube, SP is a buzzer, K is a control key. In Fig. 5, the bar code stylus comprises: the LCD; bar code receivers N1, N2, N3; a bar code signal

amplifier U1; buzzers N2, SS; function control switches S1-S4; a CPU MSP 430. A bar code receiver signal is converted by the U1 and then fed into the CPU. The CPU checks that the bar code format is correct and reasonable, and then it sends the signal to the buzzer and coding information to the outside via a sending circuit. In addition to a sending state, the LCD can further display a timing time which is set by the switches S2-S3. A circuit of the bar code stylus is power-supplied by a battery.

During use, the programmable control method for the electric cooker is operated as follows: first, a user selects a dish on the bar code menu containing control program information, processes the material using the method instructed by the menu or garnishes food, places the material into the cooker according to the requirements, switches on the power supply of the cooker, scans the control program bar code information of the dish into the stylus, and aligns the stylus tip with the reception part on the cooker body. Then, the control program bar code information will be sent out automatically. At this point, the electric cooker controller will receives the control program information and wait for a short period of time. If no new instructions are received, the controller will start to operate according to a corresponding control program until it finishes the entire control program.

What is claimed is:

1. A programmable control method for an electric cooker, characterized by: expressing a function control program in the form of bar code; receiving bar code information that reflects the control program, using a bar code stylus that receives the bar code information; inputting the bar code information into a microcontroller of a controller of the electric cooker; obtaining a corresponding temperature control program by decoding; and achieving program control of the electric cooker.

2. The method according to claim 1, characterized in that expression forms for the bar code of the electric cooker comprises temperature values and time values, which may contain a set of temperature and time values or multiple sets of temperature values and time values.

3. The bar code of the electric cooker according to claim 2, characterized in that the bar code and text description of cooking may form a menu manual or optical disk.

4. The electric cooker according to claim 2 or 3, characterized in that temperature values in the bar code coding format can be "large boiling," "medium boiling," "small boiling," "keep warm" or any value in the range between 45°C and 125°C. The time values can be set to any value from half a minute to a week.

5. The method according to claim 1, characterized in

that the control display of said electric cooker can be
arranging a row of light-emitting devices under the cooker
body pattern, with a length of the light-emitting pattern
indicating an amount of the heating power; or arranging
5   an up key and a down key to adjust an amount of the heating
power directly.

Abstract

There is disclosed a programmable control method for an electric cooker, characterized by: expressing a function control program in the form of bar code; receiving bar code information that reflects the control program, using a bar code stylus that receives the bar code information; inputting the bar code information into a microcontroller of a controller of the electric cooker; obtaining a corresponding temperature control program by decoding; and achieving program control of the electric cooker. The present invention provides users with control programs according to different needs, i.e. a menu manual or optical disk. Therefore, the method of the present invention is full functional, intuitive, convenient, and practical.